Habitat Conservation Fund

An Opportunity For Fish and Wildlife

Update 2
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PROTECTING THE FUTURE - NOW

The concept of "habitat" is not hard to understand. It means, simply, the natural place where a plant or animal lives. It doesn't mean a zoo or a game farm or an aquarium. It means a natural place.

British Columbia has a wide variety of these natural places and, in some of them, a wealth of fish and wildlife. But it is a wealth that must not be taken for granted for it can be carelessly and quickly squandered. The Habitat Conservation Fund was set up in 1981 as a special purpose fund to help prevent the loss of our most valuable natural places by raising money for habitat purchase, restoration and enhancement.

It has done very well. Since the first project on the Cowichan River in 1981 the Fund has financed 318 projects: 140 for fisheries and 178 for wildlife. It has also been involved, alone or in co-operation with others, in the acquisition of more than 700 hectares of valuable h abitat.

All of its income - principal and interest -has gone to Fund projects. How much money was received and how it was spent is listed at the end of the report.

Man and other species can live together in harmony. It doesn't happen easily or naturally, we have to work at it. But it is worth doing because we all want to maintain abundant supplies of fish and wildlife for the many and varied uses to which we put them: viewing, hunting, photographing or fishing.

The quality of our lives it tied closely to the quality of our fish and wildlife resources. They are barometers of our stewardship of habitats... theirs and ours.

ONE FUND: THREE ACCOUNTS

The Habitat Conservation Fund consists of three accounts for three different purposes: Acquisition, Enhancement, and Compensation.

THE ENHANCEMENT ACCOUNT

Most of this money -- $7,158,214 in total at the end of 1986 -- was raised through a $3.00 surcharge on all angling, hunting, guiding and trapping licenses. Other funds came from voluntary donations, bequests and gifts from concerned individuals or companies, plus interest on the surcharged funds. These other funds totaled $444,081 since 1981 and $352,352 since the last UPDATE in 1983.

Projects under this account are carried out by Ministry staff but increasingly, and deliberately, more and more projects are contracted out to competent people. This helps develop and sustain an ever-larger reserve of non-government professional and technical people in the conservation field.

Since 1981, 318 projects have been approved and started. In the years 1984, 85 and 86, 238 projects have been started; almost evenly divided between fisheries -- 108 projects -- and wildlife -- 130 projects. In addition, funds from the enhancement account ($100,000) were used for the cooperative purchase with The Nature Trust of B.C., the Nature Conservancy of Canada, and the Kootenay Wildlife Heritage Fund of Sheep Mountain in 1984-85 and for the acquisition survey for Skaha Lake in 1985-86 ($1,800).

THE ACQUISITION ACCOUNT

In the first three years of the program $974,268 from the Crown Land Fund Account of General Revenue were spent on land acquisition.

In the last three years, however, no money was available from the Crown Land Fund Account due to general government spending restraint. It is expected that with the improvement in the general economy of the province, money will become available once again from this account.

In fact, however, one small land acquisition project was accomplished in 1985-86. A 10-acre parcel which included the entire catchment basin of Bourassa Spring was acquired to protect the water supply for the Skaha hatchery. The land cost $30,000 and the money was taken from the Enhancement Account (licence surcharge revenue).

THE COMPENSATION ACCOUNT

This account accepts money from corporations and individuals as compensation for detrimental impacts on fisheries or wildlife habitat from industrial development. The money is used to acquire new habitat or enhance other habitat near the site where the impact occurred.

Three major contributions totalled $386,837; Highland valley Mines -- $250,000 plus interest, Brenda mine -- $25,000, and Pacific Northwest mine -- $2,000. Miscellaneous amounts reached $3,000.

The Highland Valley money was spent on nearby fisheries projects designed to make up for the loss of fisheries and wildlife production caused by the mine. The first project cost $29,662 and involved improving a small wetland within the village of Logan Lake. The area was fenced, a nature trail was designed and signed, and a small interpretation center was constructed.

The second Highland Valley compensation fund project cost $1,800 and consisted of distributing pre-washed drain rock over the spring area of the Island Lake to allow trout to beach spawn and re-enter the fishery.

The Brenda Mine compensation consisted of improving spawning habitat for kokanee in peachland Creek. The two-year project cost about $25,000 and in the first two years alone returned an estimated 100,000 additional kokanee fry to Okanagan Lake.

PROJECT SELECTION

Selection of suitable and productive projects is a vital part of the program. Projects must have broad support from the majority of user groups. At the same time the Fund wants to sponsor a wide range of projects for a diversity of species which hold the interest of as many people as possible.

A series of guidelines provide the basis for solid proposals:

1. they must be technically sound;
2. if innovative, they must have some justification in the literature or in experimentation elsewhere;
3. there must be reasonable chance of success;
4. there must be minimum incidental negative effects on other species;
5. both long-term and short-term gains are desirable and while immediate returns are most satisfying long-term gains are not ignored; and
6. an ideal project is one where a small amount of money will do a lot of good for a long time;

Projects are subjected to careful scrutiny by ministry staff to ensure that they meet technical and policy guidelines. They are then submitted to the Minister's public Advisory Board for a final examination and recommendation.

The Public Advisory Board consists of 10 citizens with a broad knowledge of fish and wildlife management and with a good understanding of the wishes and objectives of various public conservation groups. Board members serve without compensation: donating their time, energy and knowledge to the welfare of habitat and fish and wildlife resources in British Columbia.

Chaired by Dr. Ian McTaggart-Cowan, an internationally renowned wildlife biologist, the Board meets regularly at various places in British Columbia.

Other members of the Board are:

Nancy Anderson, naturalist, New Denver
Dr. Bert Brink, retired plant science professor from UBC, Vancouver
Lloyd Brooks, retired forester, park planner and former Deputy Minster, Victoria
Tom Christy, guide outfitter, Lillooet
Judge Leo Gansner, naturalist, Cranbrook
Barbara Nield, conservationist, Vancouver
Terry O'Brien, lawyer, Vancouver
Tony Sevcik, photographer, Chilliwack
Tommy Walker, author and former guide, Smithers

The final approval of projects is made by the Minister of Environment and Parks on the recommendations of the Advisory Board. In its six-year history of submitting recommendations to the Minister the Board has not had one rejected, attesting to the Ministers' confidence in the Board and the Board's integrity and competence.

BETTER HABITAT: BETTER POPULATIONS

The end result of habitat enhancement is increased abundance or diversity of native species. This single objective can be achieved through various techniques ranging from burning wildlife range to building fish ladders, from blasting debris out of a stream to flooding shallow waterbodies for waterfowl.

Each technique must meet the specific needs of the animals involved and recognize the particular circumstances of the land or water in question.

There generally is not a cut-and-dried method to be taken off the shelf and administered routinely in every situation. Even some of the established techniques have undergone extensive change and development as the result of experience from earlier projects.

In this review, we will discuss two techniques here in some detail: artificial circulation (lake aeration) for fisheries and transplants of wildlife.

ARTIFICIAL CIRCULATION (LAKE AERATION)

Trout in some interior lakes die during the winter due to lack of oxygen, so-called winter kill. In some lakes eutrophication (premature ageing of a lake) causes distress for some fish during the summer. The solution seems to lie in circulating oxygen-rich water into the depths of the lake to replace oxygen-poor water.

The problem, known for several decades, can be solved in a workable, cost-efficient manner. The solution lies in using compressors to pump fresh air into the lake. Sounds simple? It isn't!

First of all, not all lakes need the extra oxygen in the winter months. Four to six weeks of oxygen injection in the autumn in Corbett Lake, for example, will prevent winter kill later on. Other lakes require artificial circulation in both fall and winter. Still others only need a shot of oxygen in the winter or the summer.

Evaluating the lakes' needs is an important part of the process. It may take several years of monitoring to determine those needs. Then the managers must decide what circulation system is best suited for the job: diesel/propane compressor, diesel/propane blower, electric compressor or blower, electric surface aerator, solar powered circulator or wind powered circulator.

Obviously some are better than others; they may be cheaper, more reliable, or less difficult to install. Distance from power sources, winter access, and distance from maintenance staff are factors in deciding which system to use. Special site circumstances and the amount of available funds are also key factors in choosing a system.

In reality, not all artificial circulation projects pay off to the same extent. An evaluation of each project -- both operational and benefit-cost --is essential for prudent expenditure.

There are three levels of evaluation:

1. measuring oxygen concentrations during the winter months;

2. confirming fish survival the following spring;

3. estimating angler success before and after project completion.

These levels are relatively easy to reach and becoming standard practice for all projects.

Benefit-cost evaluations are more difficult but are being used. In simplest terms, benefit-cost analysis determines if the benefits of the project are equal to, more than, or less than the cost of project. Obviously there is no sense in a project if it costs more than the value of the benefits.

Benefit-cost ratios are influenced by the operation of the circulation system. It makes sense to operate the system long enough to prevent winter kill but for as short a time as possible thereby reducing operational costs. It also makes sense to install circulation systems on lakes which will be the most productive over long periods of time.' Economies of scale indicate that while circulation systems in larger lakes are usually more costly to set up they usually provide better long-run value.

Some 19 artificial circulation projects have been carried out with Habitat Conservation Fund support. They involved more than 600 hectares of water and provided thousands of angler days that would otherwise not be available. But artificial circulation is not without its drawbacks. One of these may be the long-term change it could bring about in lake metabolism that might create increased oxygen consumption. Research continues into this generally useful and productive practice to improve angling opportunities for British Columbians.

In addition to aeration projects, the Fund contributes to fisheries enhancement by financing projects such as:

* stream clearing where blocked passage prevents fish from reaching spawning or rearing areas,

* improvement of rearing habitat by such methods as adding boulders or logs where fish can hide and rest,

* improvement to spawning grounds where gravels need replacing or restoration,

* building fishways so fish can overcome obstacles to reach spawning and rearing areas,

* construction of new spawning channels with suitable gravels and controlled water flows,

* rehabilitating lakes by poisoning undesirable fish that compete with or predate on gamefish,

* lake fertilization to increase food supply for fish.

TRANSPLANTS AND INTRODUCTIONS

Wildlife isn't always where we want it. Many habitats, for a variety of reasons, lack the wildlife they used to have. But when the habitat is suitable, transplanting animals is sometimes the means to fill the void.

Mountain goats for example, can be moved to ecological niches where there are either no mountain goats or too few to re -establish the heard. (An ecological niche is a fancy wa y of describing the habitat that an animal requires for survival.)

Some niches have been emptied of wildlife by a variety of causes such as over-hunting, habitat destruction, or winter kills. In many cases the species could thrive in the area if they could get back there. Here is where the Habitat Conservation Fund plays a leading role.

There were 21 transplant operations, plus transplant assessment and feasibility studies, in the last three years involving species as diverse as mountain goats, California bighorn sheep, mountain caribou, and one project involved burrowing owls. As one would expect some transplants have been more successful than others.

Let's look at two success stories; Mountain goats to potato Mountain range between Tatlayoko and Chilko Lake, and burrowing owls at the north end of Osoyoos Lake.

Before looking at these examples we should distinguish between transplants and introductions. Transplants involve animals that are native to the area and have lived there before. Introductions, on the other hand, usually involve animals, often from foreign countries, that someone thinks would be an asset to the native wildlife population. The classic examples are rabbits to Australia, and starlings to North America.

The Habitat Conservation Fund sponsors transplants of native species. It does not finance the introduction of exotics in the hope of improving B.C.'s wildlife menu.

Mountain goats are increasingly an attraction for outdoor recreationists as well as being trophy animals for hunters. The Potato Mountain range could satisfy both goals because there is relatively good access on mining and logging roads and the animals themselves do not compete with other species.

At the time the Potato Mountain transplant took place there was only one goat left in the area; the rest of the heard had been eliminated by over hunting and disruptive mining and logging activity. Clearly it would be unwise to transplant goats into an area if the factors which earlier caused problems for them had not been resolved. In the potato Mountain case the detrimental factors were under control. The habitat itself was well suited for more goats.

The plan for rehabilitating the population involved capturing eight goats from nearby areas that could sustain the loss of a few goats and moving them by helicopter to the new area. In fact, only six goats were captured, five nannies and one billy. Three of the goats were captured with a net gun and three by an immobilization gun. One six year old nanny died when the tranquilizer dart pierced the body cavity, an unfortunate but unpreventable accident.

The transplant took place in mid August, 1984. It cost $4,830 and it was a success. The goats stayed in the area and kids have since been sighted there. More transplants are planned for this area to speed up the growth of the population.

The situation with burrowing owls was quite different. These attractive little raptors were common in the Okanagan Valley until the early 1900's when their population started to decline. Since then, to all intents and purposes, they were destroyed as a breeding population. They are now on the B.C. endangered species list but there is no reason to believe that they cannot once again sustain a healthy population in the Okanagan Valley.

The site chosen for the transplant is open benchland north of Osoyoos Lake, only moderately affected by grazing and quite suitable for the birds to stage a revival. Burrowing owls sit brazenly on top of fence posts looking for rodents for dinner. They are extremely vulnerable to people with rifles and nothing constructive to do with their time. Many were shot.

Another factor in the decline in owls may have been the lack of burrows created by small mammals such as badgers and ground squirrels. In 1983, a HCF project solved the burrow problem by creating 41 artificial nesting burrows. The owls quite liked them.

In 1985 five families of burrowing owls were transplanted from Washington state to B.C. Thirty-eight young owls were fledged from those five families. They migrated south in the fall but four at least returned in 1986 and started nesting. Two juvenile owls were observed during the summer. Does that make this project a success or a failure? Time and further observation will be needed before a conclusion can be reached but it is sufficient to say that the HCF project has excited the imagination of many citizens who will await with interest the final verdict of burrowing owls in B.C.

Not all transplants are as successful. In some cases animals have turned around and gone back to where they came from. Transplanting animals is not the answer for all situations but it is a useful tool when applied professionally in suitable circumstances.

Transplants are not the only enhancement techniques endorsed and supported by the HCF.

* prescribed burning increases the quantity and quality of vegetation by interrupting the natural succession of vegetation thereby promoting new growth.

* mechanical methods are used to knock down large stands of maturing growth that no longer fills wildlife needs.

* regulating water levels is an essential element in improving wetland and marsh habitat. In some cases areas are drained for geese and upland birds while other areas are flooded to provide suitable water bodies for shorebirds and ducks.

The HCF believes that a wide range of activities is the best approach to enhancing wildlife habitat in British Columbia and it has backed this belief with funds.

WILDLIFE PROJECTS ***

PRESCRIBED BURNING

Burning interrupts the natural succession of forage plant vegetation from young nutritious growth to older, less nutritious ones. By arresting the old growth, burning sets the vegetation back to its succulent new-growth stage. This is beneficial to wildlife because it increases both quality and quantity of the food supply.

Here are the burning projects started during the past three years or from earlier years.

Southern Interior Region (Thompson-Nicola)

1.	Thompson Prescribed Fires	81-87	$98,848	continuing

Kootenay Region

2.	East Kootenay Mule Deer	85-87	$46,408	continuing
3.	Kootenay Lake Ungulates	84-87	$47,958	completed
4.	East Kootenay Whitetailed Deer	85-87	$39,928	continuing
5.	Lower Columbia Deer	86-87	$11,645	continuing

Northern Region (Skeena)

6.	Thinhorn Sheep	84-87	$64,833	continuing
7.	Chelaslie Deer	85-86	$3,018	completed
8.	Grouse Mtn Moose	85-86	$2,919	completed

*** Some projects contain activities that fall into several categories. We have listed them in the category which was their main emphasis.

Northern Region (Omineca-Peace)

9.	Northern Elk Burn	81-85 & 86-87	$258,853	continuing
10.	Dawson Creek Fires	83-87	$162,759	continuing
11.	Mclennan River Moose	84-87	$18,252	continuing
12.	Fort St. John Fires	85-87	$69,624	continuing
13.	Mcbride Deer	86-87	$4,023	continuing
14.	Peace River Burn	84-85	$5,715	completed
15.	Northern Deadfall Burn	84-85	$20,678	completed

Southern Interior Region (Okanagan)

16.	Wilkinson Underburn	86-87	$640	continuing
17.	Ashnola Prescribed Burn	81-85 & 86-87	$180,117	continuing
18.	Coalmont Underburn	84-85 & 86-87	$9,042	completed
19.	Naramata Underburn	84-85	$1,573	completed

Provincial project

20.	Fire Mop-Up	86-87	$22,369	continuing

TRANSPLANTS

Moving animals to new habitats, historic ranges, or to areas prepared for them by enhancement techniques is often an effective way of re -establishing or shoring up a population. It can also extend on animal's range.

Vancouver Island Region

21.	Vancouver Island Marmot	84-85 & 86-87	$46,665	completed

Lower Mainland Region

22.	Sechelt Elk	86-87	$5,905	continuing

Southern Interior Region (Thompson-Nicola)

23.	Thompson Burrowing Owls	84-85	$4,056	completed
24.	Kamloops Sheep Transplant	84-85	$123	completed
25.	Dunn Peak Goat	85-86	$10,883	continuing
26.	Skwaam Bay Bighorn	86-87	$3,119	continuing

Kootenay Region

27.	Monashee Caribou Transplant	84-85	$19,312	completed
28.	East Kootenay Bighorn	81-87	$319,686	continuing

Southern Interior Region (Caribou)

29.	Potato Mtn Goat Transplant	84-85	$4,380	completed
30.	Mcclinchy Caribou Transplant	84-85	$21,259	completed
31.	Chilcotin Sheep Transplant	84-85	$10,325	completed
32.	Kappan Caribou	85-87	$49,182	continuing
33.	Moran Bighorn	85-86	$22,686	completed

Northern Region (Omineca-Peace)

34.	Bullmoose Mtn Goat Transplant	83-87	$70,454	completed
35.	Sikanni Elk	86-87	$3,007	completed

Southern Interior Region (Okanagan)

36.	Granby Sheep Transplant	83-85	$10,232	completed
37.	Sitkum Goat Transplant	84-85	$16,234	completed
38.	Gilpin Sheep Transplant	85-86	$36,654	completed
39.	Tulameen Goats	85-87	$20,881	continuing
40.	Caribou Monitoring	86-87	$3,767	completed
41.	Okanagan Burrowing Owls	83-87	$26,139	continuing

TREATMENT: THINNING, SLASHING, PLANTING

When woody vegetation such as willow or aspen gets too mature to be useful for big game forage it is necessary to knock it down to make way for new growth which is more succulent and easily reached by animals. This is done with bulldozers or by selective logging. The younger plants which sucker up or rise independently in mechanically treated or thinned areas provide an increased quality and quantity of forage. Sometimes, it is necessary to plant forage species such as Ceanothus or other preferred animal food.

Vancouver Island Region

42.	Strathcona Elk Forage	85-86	$10,938	completed
43.	Second Growth Forage	85-86	$33,144	completed

Lower Mainland Region

44.	Pitt Wetland Vegetation	84-87	$94,772	continuing

Southern Interior Region (Thompson-Nicola)

45.	Eagan Lake Moose Range	84-85	$5,000	completed
46.	Skull Mountain Mule Deer	84-85	$7,514	completed
47.	Lytton Elk	84-85 & 86-87	$7,507	completed
48.	Mule Deer Forage	85-87	$40,118	continuing

Kootenays Region

49.	West Kootenay Goats	85-87	$9,157	continuing
50.	Flathead Grizzly/Moose	83-85	$12,407	completed

Southern Interior Region (Cariboo)

51.	Cariboo Moose Range	83-87	$136,903	continuing
52.	Junction Wildlife	81-86	$134,404	completed
53.	Pine Beetle Salvage	86-87	$28,269	continuing
54.	Chilanko Uplands	84-85	$527	completed

Northern Region (Skeena)

55.	Bulkley Valley Moose	82-85	$35,698	completed
56.	Nadina River Moose	85-86	$24,450	completed
57.	Tchesinkut Lake Moose	85-87	$20,168	completed

Northern Region (Omineca-Peace)

57.	Grove Burn	81-83 & 85-87	$42,380	continuing

Southern Interior Region (Okanagan)

57.	Ceanothus	85-87	$32,678	continuing

WETLAND ENHANCEMENT

Too much water, or too little, can cause problems for wildlife. Some areas must be drained to provide pasture for animals such as Canada geese or upland birds. Other areas need to be flooded for waterfowl or shorebirds such as sandpipers. Dykes, (both built and breached), dams, and pumping systems are used to control water levels. Once this is accomplished further habitat enhancement may include sowing grass or building or improving nesting areas.

Vancouver Island Region

60.	Cowichan Estuary	84-87	$45,707	continuing
61.	Special Area Wetlands	84-85-86	$29,804	completed

Lower Mainland Region

62.	Boundary Bay Raptors	84-86	$41,045	completed

Southern Interior Region (Cariboo)

63.	Stum Lake Pelicans	85-87	$8,809	completed

Southern Interior Region (Okanagan)

64.	Osoyoos Oxbows	86-87	$24,093	completed

MISCELLANEOUS CATEGORY

Just as wildlife is a varied and complex resource, so too is its management. Many activities do not fall into neat categories. A broad variety of techniques are used to improve habitat. Here are some of them.

Southern Interior Region (Thompson-Nicola)

65.	Tranquille Wildlife	86-87	$4,540	continuing

Southern Interior Region (Okanagan)

66.	Vaseux Wildlife	85-86	$10,029	completed
67.	Toprailing	85-87	$16,857	completed

Province-wide

68.	UVIC Co-op	84-85	$44,000	completed

FISHERIES PROJECTS

STREAM CLEARANCE

As fish swim upstream to spawning or rearing habitats their progress may be hampered or stopped altogether by obstacles such as log jams, beaver dams, landslides, or improperly designed or installed culverts. Removal of these obstacles or provision of new passages make access to the desired areas possible.

Vancouver Island Region

69.	Vancouver Island Streams	86-87	$25,863	continuing

Lower Mainland Region

70.	Davis Lake Clearance	84-86	$21,941	completed

Southern Interior Region (Thompson-Nicola)

71.	Kamloops Tributary Clearance	84-85	$47,237	completed

Southern Interior Region (Cariboo)

72.	Cariboo Stream Clearance	81-85 & 86-87	$186,934	continuing
73.	Blue Lead Creek	86-87	$10,400	completed

Northern Region (Skeena)

74.	Kathlyn Creek	85-87	$7,991	completed
75.	Nithi River	85-86	$4,745	completed

IMPROVEMENTS TO REARING HABITAT

When spawning and incubation is over and the juvenile fish appear they need suitable conditions for rearing. These conditions can be provided by creating pools or riffles or by providing hiding and resting places through the careful placement of logs or boulders. Fencing is sometimes necessary to protect rearing areas and so too, is water release from created storage.

Northern Region (Omineca-Peace)

76.	Shesta Lake	85-87	$22,841	completed

Southern Interior Region (Okanagan)

77.	Brenda Lake Storage	86-87	$16,382	completed

IMPROVEMENTS OF SPAWNING GROUNDS

Spawning grounds lose their usefulness to fish when the gravel in them is washed away or becomes covered with silt. When this occurs improvement remedies include depositing new gravel, spawning platforms, or ranking and cleaning the old gravel with high pressure water jets of suction devices. Fencing is sometimes necessary to protect spawning areas and so too, is water release from created storage.

Lower Mainland Region

78.	Rolley Creek Spawning	84-85	$5,039	completed
79.	Fraser Valley Fencing	85-87	$21,251	continuing
80.	Robert Burnaby Creek	85-86	$2,391	completed

Southern Interior Region (Thompson-Nicola)

81.	Loon Creek Enhancement	85-87	$97,347	continuing
82.	Kamloops Lake Fencing	85-86	$23,070	completed

Kootenay Region

83.	Alces Lake	86-87	$15,408	continuing
84.	Duck Lake Bass	86-87	$14,988	continuing
85.	Gerrard	86-87	$14,087	continuing

Southern Interior Region (Cariboo)

86.	Kokanee Bay Spawning	83-86	$30,124	completed
87.	Little Horsefly River	85-86	$3,493	completed
88.	Cariboo Lakes Spawning	84-86	$22,471	completed
89.	Big Lake	86-87	$1,620	completed

Northern Region (Skeena)

90.	Lakelse Lake	85-86	$7,595	completed
91.	Beeley Creek	85-86	$4,610	completed

Northern Region (Omineca Peace)

92.	Bateman Creek Gravel	84-86	$39,709	completed
93.	Corkscrew Creek	85-87	$59,407	completed
94.	Chubb Lake Inlet Control	84-85	$24,656	completed

Southern Interior Region (Okanagan)

95.	Okanagan River Improvement	84-85 & 86-87	$79,976	completed
96.	Vernon Creek	86-87	$6,746	continuing
97.	Peachland Creek	86-87	$7,942	continuing

FISHWAYS AND SCREENING

Some obstacles to spawning or rearing areas, such as waterfalls or hydro dams, cannot be removed and other means of access must be found. Fishways, which consist of a series of steps or baffled compartments, provide resting areas with reduced water velocities. Fishways allow passage for more agile gamefish while acting as barriers to undesirable species. Screens prevent gamefish from going into undesirable waters such as irrigation ditches where they may become trapped. These devices also prevent the coarse fish from invading spawning and rearing areas of desirable species.

Lower Mainland Region

98.	Salmon River Pumphouse	85-86	$7,491	continuing

Kootenay Region

99.	Blackwater Creek	85-86	$9,513	completed

Southern Interior Region (Cariboo)

100.	Mit Creek	86-87	$370	completed

Southern Interior Region (Okanagan)

101.	Powers Creek Fishway	86-87	$10,649	completed
102.	Powers Creek Screening	86-87	$4,636	completed

ARTIFICAL SPAWNING CHANNELS

Sometimes existing natural spawning streams are insufficient to support desired fish populations. To overcome this, new channels are built next to existing streams. These new channels with suitable gravels and a controlled water flow help ensure maximum production of juvenile fish.

Kootenay Region

103.	Whiteswan Lake Channel	81-85	$50,691	continuing
104.	Meadow Creek	83-87	$284,559	completed
105.	Kokanee Creek Channel	84-87	$87,439	continuing

Southern Interior Region (Cariboo)

106.	Hanceville Fencing	85-86	$4,778	completed

COARSE FISH CONTROL, TRANSPLANTS AND FERTILIZATION

Sometimes undesirable coarse fish become so numerous in a lake they reduce gamefish populations through competition or predation. A carefully planned and administered pesticide program can be carried out to reduce the coarse fish population before the lake is restocked with desirable species. Barriers are sometimes used to control coarse fish movements. These operations are all controlled by both federal and provincial government legislation. Other lakes require fertilization to improve growing conditions while still others require the stockin g of gamefish.

Lower Mainland Region

107.	Salsbury Lake Fertilization	85-87	$27,167	continuing

Southern Interior Region (Thompson-Nicola)

108.	Kane Valley Lakes Rehabilitation	83-84, 86-87	$103,735	completed

Kootenay Region

109.	Champion Lakes Rehabilitation	84-87	$45,864	completed
110.	Summit Lake Rehabilitation	85-87	$122,266	completed
111.	Cherry Lake Rehabilitation	84-85	$40,578	completed
112.	Kiakho Lake	85-87	$52,924	continuing
113.	Echo Lake Rehabilitation	86-87	$28,174	continuing
114.	Westarm Fertilization	85-87	$154,070	continuing

Southern Interior Region (Cariboo)

115.	Puntzi Lake	84-87	$29,868	completed
116.	Till Lake Coho	84-87	$40,867	completed

Northern Region (Skeena)

117.	Divison Lake Inlet	83-85	$7,469	completed
118.	Dunalter Lake Rehabilitation	85-87	$20,390	completed

Northern Region (Omineca Peace)

119.	Sukunka River	86-87	$23,453	continuing
120.	Charlie Lake Forage Fish	85-87	$23,081	completed

Southern Interior Region (Okanagan)

121.	Holstein Lake	85-86	$9,453	completed
122.	Burnell/Ripley Lakes Rehabilitation	86-87	$14,380	completed
123.	Allison Lake Barrier	84-85	$8,396	completed

LAKE AERATION – ARTIFICIAL CIRCULATION

When lakes suffer a shortage of oxygen for whatever reason action must be taken to increase oxygen supplies otherwise fish die-off will occur. Oxygen-rich fresh air is pumped into the lakes causing the lower depth water to recirculate to the surface where it is exposed to fresh air. Diversion of water into a lake can also help the aeration process.

Vancouver Island Region

124.	St. Mary's Lake Aeration	84-87	$122,516	continuing
125.	Glen Lake Aeration	84-86	$36,976	completed
126.	Glen/Langford Lakes Evaluation	85-86	$5,737	completed

Southern Interior Region (Thompson-Nicola)

127.	Kamloops Lakes Aeration	81-85	$169,107	completed
128.	Dairy Creek Diversion	85-86	$22,988	completed

Kootenay Region

129.	Johnson Lake Aeration	85-86	$20,764	completed
130.	Ha Has Lake Aeration	84-86	$36,906	completed
131.	Solar Aeration	86-87	$27,767	completed

Northern Region (Omineca-Peace)

132.	Inga Lake Aeration	84-85	$10,269	completed
133.	Beaver Lake	86-87	$24,294	completed

Southern Interior Region (Okanagan)

134.	Burnell Lake	84-85	$6,352	continuing

MISCELLANEOUS PROJECTS

Some projects do not fall easily into categories because they may encompass several techniques required to solve a particular fisheries problem.

Southern Interior Region (Okanagan)

135.	Till/Forest Lakes Gravel	84-85	$3,187	completed

Northern Region (Skeena)

136.	Round Lake Spawning Platform	85-87	$8,571	continuing

ENHANCEMENT PLANNING

Enhancement involves inventory, monitoring, feasibility studies, and general planning to provide the basis for future habitat management and enhancement activities.

Fisheries

Vancouver Island Region

137.	Cowichan River Side Channel	86-87	$10,000	completed

Northern Region (Omineca Peace)

138.	Omineca Feasibility	86-87	$40,833	completed

Southern Interior Region (Okanagan)

139.	Okanagan Lakes Planning	84-85	$3,127	completed

Wildlife

Vancouver Island Region

140.	Young Forest Winter Range	86-87	$26,005	continuing
141.	Vancouver Island Marten	86-87	$13,414	continuing

Southern Interior Region (Thompson-Nicola)

142.	Cavity Nesting Birds	84-85	$5,503	completed

Kootenay Region

143.	East Kootenay Curlew	85-87	$15,075	continuing

Southern Interior Region (Cariboo)

144.	Cariboo River Enhancement	85-87	$22,937	continuing

Northern Region (Skeena)

145.	Klappan Stone's Sheep	84-85	$7,998	completed
146.	Tweedsmuir Caribou	86-87	$18,738	completed

Northern Region (Omineca Peace)

147.	Nechako Enhancement Plan	85-86	$23,738	completed

TECHNICAL DEVELOPMENT, PUBLIC USE AND ADMINISTRATION

TECHNICAL DEVELOPMENT

Some projects do not fall neatly into one of the foregoing categories yet they are essential to the long-term well being of Fund operations. An example of such a project is the development of technical standards for monitoring guidelines.

Wildlife

Elk Trap Construction	85-86	$9,258	completed
Willow Enhancement Guide	86-87	$15,516	completed
Prescribed Burning Monitoring Guide	85-87	$21,034	continuing

PUBLIC USE

Fish and wildlife must be seen to be enjoyed. Often, enhancement projects occur near urban centers or along roadways. With suitable viewing facilities they present an opportunity for educational and recreational enjoyment. Trails and observation towers supplemented by interpretative material promotes the enjoyment of fish and wildlife. Nesting structures and artificial habitats also help make viewing more accessible.

Public use and education

Public Relations	81-87	$33,714	continuing
Information Kit	85-86	$16,425	completed
Wildlife Centennial	86-87	$10,000	completed

Fisheries

Victoria office

Continuing Annual Maintenance Support		$19,595	continuing

Lower Mainland Region

Continuing Annual Maintenance Support	86-87	$19,595	continuing

Southern Interior Region (Thompson-Nicola)

Film - Releasing Fish Alive	86-87	$9,644	continuing

Wildlife

Vancouver Island Region

Cowichan Demonstration Forest	86-87	$13,982	completed

Lower Mainland Region

Pitt Public Use	86-87	$21,469	continuing

Northern Region (Omineca-Peace)

Landowner's Guide	85-86	$8,978	continuing
Peace River Nestbox Program	85-87	$12,033	continuing

ADMINISTRATION

Money is allocated to facilitate project and policy development of the Fund and also for expenses of the Pubic Advisory Board.

FUND ADMINISTRATION

Public Advisory Board	81-87	$55,446	continuing
General Administration	83-87	$120,661	continuing
Policy Manual	84-85	$4,341	completed

HABITAT CONSERVATION FUND
FINANCIAL STATEMENTS
1984-1986

THE ENHANCEMENT ACCOUNT

	1986	1985	1984
Opening Balance	$1,110,179	$847,616	$96,225
Receipts:			
Licence surcharges	1,377,703	1,422,547	1,420,428
Donations, bequests	2,373	1,686	2,154
Grundle Art Project	1,340	2,834	18,046
Interest	113,354	143,427	60,972
	2,604,949	2,418,110	1,597,825
Disbursements:			
Enhancement Projects	1,416,370	1,307,931	750,209
CLOSING BALANCE	$1,188,579	$1,110,179	$847,616

THE ACQUISITION ACCOUNT	0	0	0

THE COMPENSATION ACCOUNT

Opening Balance	$291,028	$273,584	$0
Receipts:			
Highland Valley	0	0	250,000
Interest	27,534	28,587	23,584
Brenda Mines	25,000	0	0
Pacific Northwest	2,000	0	0
	345,562	302,171	273,584
Disbursements:	44,592	11,143	0
CLOSING BLANCES	$300,970	$291,028	$273,584

DONATIONS AND FUND RAISING

While most of the Fund's money comes from the surcharge on various fishing, hunting, trapping, and guiding licenses and appreciable amount comes from donations and bequests. All donations and bequests are deposited directly to the Fund and are tax deductible.

For more information about how you can contribute to this worthwhile conservation program write:

Habitat Conservation Fund
Ministry of Environment and Parks
Parliament Buildings
Victoria, B.C.
V8V 1X5

or phone

(604) 387-9369